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PHOTOGRAPH OF THE CLUSTER M. 34 = G. C. 584.

A negative of the cluster M. 34 ($2^h 35^m + 42^\circ 17'$) was taken on Dec. 14, 1890 in a rather hazy sky with an exposure of 60^m . It has since been compared with the map given by Mr. O. A. L. PIHL in his Monograph (Micrometric examination of Stellar Cluster in *Perseus*. Christiania 1869, 4to.) The general agreement is excellent. There are, however, three cases of obvious disagreement between the negative and the map which it may be worth while to record. It is to be noticed that these cases all refer to the position or magnitude of the smaller stars (10 mag. or less) and that Mr. PIHL gave comparatively little attention to these.* It is therefore probable that the discrepancies referred to are accidental. Still, they are recorded as below.

I. Near the stars nos. 35, 36 Mr. PIHL gives 3 others of about 11 magnitude. In the map the two northernmost of these point very nearly to Star no. 4. In the negative their direction intersects the line 4—1 somewhere near its middle point.

II. In the map there is an 11 mag. star near no. 66, which we will call *a*. The line 66—*a* points (in the map) to Star 24. In the negative there is a faint star 13-14 mag. in the situation of *a*. There is also a star 11 mag. about $17''$ further north which is not given in the map.

III. The magnitudes of the small stars on the line 66 to 79 are quite different in the map and in the negative.

I may note a star given in the map at $2^h 33^m 1^s; + 42^\circ 1'$ which the negative shows to be double ($p = 60^\circ, s = 3''$ mags. 11-13 estimated.) Mr. PIHL's observations were made with a small refractor of $3\frac{1}{4}$ inches aperture. Within the polygon bounded by the lines 69-47-59-68-79-75-69 he has mapped 14 stars, while the negative shows 27. This is a small increase under the circumstances and shows that this cluster is not very rich in the smaller stars.

E. S. H.

MOON-NEGATIVES TAKEN AT THE LICK OBSERVATORY,
1888 AND 1890.

It may be of use to give here a list of the negatives of the Moon taken, up to this time, at the Lick Observatory with the 33-inch photographic lens. It is intended to continue making such plates until a pair of satisfactory negatives has been secured for every few hours of

* See his Memoir, p. 12.

the Moon's age. Two negatives are necessary, in order that any defect in one may be detected by comparing it with another. A full series of such plates will have many uses. Among others is the possibility of determining questions which arise, from time to time, with regard to changes on the Moon's surface, by comparing two negatives taken in the same phase at different epochs. Nothing is said here of direct enlargements of portions of the Moon, as the matter is still in the experimental stage. A number of admirable enlargements from negatives in the focus have also been made in the camera by Mr. BURNHAM, Mr. BARNARD and Mr. CAMPBELL.

During August, 1888, Mr. BURNHAM made a series of 67 experimental Moon-negatives, at my request. Quite a number of these have been given away and some very excellent ones have unfortunately been broken in transmission to and from the observatory. A list of those now at the Lick Observatory is printed below.*

Negatives of the Moon made by S. W. Burnham.

No.	Date, 1888.	Moon's Age.	No.	Date, 1888.	Moon's Age.
?	August 12	5 days	40	August 22	15 days
9	" 13	6 "	43	" 23	16 "
12	" 14	7 "	47	" 24	17 "
14	" 14	7 "	48	" 25	18 "
27	" 16	9 "	51	" 26	19 "
29	" 17	10 "	56	" 27	20 "
33	" 18.	11 "	57	" 28	21 "
35	" 20	13 "	61	" 30	23 "
38	" 21	14 "	65	" 31	24 "

No Negatives were taken during 1889. The negatives named in the list which follows have been exposed by myself aided usually by Mr. W. W. CAMPBELL, but often by either Mr. SCHAEBERLE, Mr. KEELER or Mr. A. J. BURNHAM. Nearly all of the negatives taken before September 8, were developed by

* Mr. I. W. TABER (8 Montgomery street, San Francisco) has copies of No. 9 (Moon's Age, 6 days), No. 16 (7 days), No. 20 (8 days), No. 50 (18 days) and is prepared to furnish copies of them.

Mr. CAMPBELL, and all except two, taken since that time, have been developed by Mr. BARNARD. The two referred to have been developed by Mr. BURNHAM. The making of these moon-negatives is, by no means, the principal work of the photographic telescope, but they have been taken as occasion served, and this work will be continued. Copies and duplicates of some of these negatives have been deposited with a few of the principal scientific societies in America and in Europe.

*Negatives of the Moon made in 1890.**

Date, 1890.	Moon's Age.	Date, 1890.	Moon's Age.
*July 20	4 days 3 hours	*Aug. 25	10 days 13 hours
*Nov. 16	4 " 12 "	*July 27	11 " 5 "
July 21	5 " 4 "	*July 27	11 " 6 "
*Nov. 17	5 " 12½ "	*July 28	12 " 3 "
April 24	5 " 20 "	*June 29	12 " 4 "
April 25	6 " 20 "	*July 28	12 " 6 "
*Oct. 20	6 " 23 "	*June 29	12 " 6 "
*Sept. 21	7 " 3 "	*Nov. 24	12 " 15½ "
*Sept. 22	8 " 4 "	Oct. 26	13 " 0 "
April 27	8 " 20 "	*Oct. 26	13 " 1 "
April 27	8 " 21 "	*Oct. 27	14 " 1 "
April 27	8 " 22 "	*Aug. 31	16 " 18 "
*April 27	8 " 23 "	*Aug. 3	18 " 8 "
*Aug. 24	9 " 11 "	*Aug. 4	19 " 8 "
*Aug. 25	10 " 12 "	*Nov. 3	21 " 5 "

* The negatives marked * are in duplicate.